

5

| | | | |
|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/737,323 | CANNON ET AL. | |
| | Examiner | Art Unit | |
| | Lawrence B. Williams | 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to remarks filed on 10 April 2007.
2. ☒ The allowed claim(s) is/are 1-25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DRAWINGS

1. The drawings were received on 10 April 2007. These drawings are accepted by the examiner.

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: The instant application discloses A method and system for modulating and detecting high datarate symbol communications. A search of prior art records has failed to teach or suggest alone or in combination:

“a receiver comprising: a demodulator for receiving symbol signal frames and producing quadrature demodulated output signals; a mapping look-up unit coupled to said demodulator for receiving said quadrature demodulated output signals and determining a three-bit symbol decode associated with points on a predetermined constellation, wherein said constellation has the property of having a first and second point of differing amplitude and zero reference phase, a third point having an amplitude equal to an amplitude of said first point and a 180 degree reference phase, a fourth point having an amplitude equal to an amplitude of said second point and a 180 degree reference phase, fifth and sixth points having real magnitudes substantially equal to said amplitude of said first point and equal imaginary magnitudes of opposite sign, and seventh and eighth points having real magnitudes substantially equal to a negation of said amplitude of said first point and equal imaginary magnitudes of opposite sign, wherein said mapping look- up unit produces probability values for each bit in said three-bit symbol decode from log-likelihood grouping maps for determining membership within a grouping associating said points with values of each bit of said three-bit symbol decode, whereby magnitudes of said quadrature demodulated output signals determine whether or not each symbol signal frame has membership in a first subgroup corresponding to a logical zero or membership

in a second subgroup corresponding to a logical one for each grouping; and a codec coupled to an output of said mapping lookup unit for receiving said probability values for each bit and determining values of each bit” as disclosed in claim 1.

“a method for receiving a communications signal bearing three- bit symbol encodes associated with points on a predetermined constellation, wherein said constellation has the property of having a first and second point of differing amplitude and zero reference phase, a third point having an amplitude equal to an amplitude of said first point and a 180 degree reference phase, a fourth point having an amplitude equal to an amplitude of said second point and a 180 degree reference phase, fifth and sixth points having real magnitudes substantially equal to said amplitude of said first point and equal imaginary magnitudes of opposite sign, and seventh and eighth points having real magnitudes substantially equal to a negation of said amplitude of said first point and equal imaginary magnitudes of opposite sign, said method comprising: demodulating a stream of symbol signal frames and producing quadrature demodulated output signals; retrieving log-likelihood probability values estimating a likelihood of each symbol signal frame being transmitted as each point of said constellation, each of said probability values retrieved in conformity with values of said quadrature demodulated output signals and for an associated one of said points; and determining symbols associated with said signal frames in conformity with said probability values” as disclosed in claim 14.

“a receiver comprising: a demodulator for receiving symbol signal frames and producing quadrature demodulated output signals; a mapping look-up unit coupled to said demodulator for receiving said quadrature demodulated output signals and determining a three-

Art Unit: 2611

bit symbol decode associated with points on a predetermined constellation, wherein said constellation has eight points having complex magnitudes of $(K/2, 0)$, $(3K/2, 0)$, $(K/2, K)$, $(-K/2, K)$, $(-K/2, 0)$, $(-3K/2, 0)$, $(-K/2, K)$ and $(K/2, K)$, respectively for a particular rotation of said constellation, where K is an arbitrary coefficient for determining an overall amplitude of said constellation, wherein said mapping look-up unit produces probability values for each bit in said three-bit symbol decode from log-likelihood grouping maps for determining membership within a grouping associating said points with values of each bit of said three-bit symbol decode, whereby magnitudes of said quadrature demodulated output signals determine whether or not each symbol signal frame has membership in a first subgroup corresponding to a logical zero or membership in a second subgroup corresponding to a logical one for each grouping, wherein a grouping associated with a first bit of said three-bit symbol decode divides said constellation between a first subgroup including said first, second, fifth and seventh points and a second subgroup comprising all points that are not members of said first subgroup, wherein a grouping associated with a second bit of said three-bit symbol decode divides said constellation between a third subgroup including said first, third, seventh and eighth points and a fourth subgroup comprising all points that are not members of said third subgroup, and wherein a grouping associated with a third bit of said three-bit symbol decode divides said constellation between a fifth subgroup including said first, third, fifth and sixth points and a sixth subgroup comprising all points that are not members of said fifth subgroup; and a forward error correction block coupled to an output of said mapping look-up unit for receiving said three-bit symbol decode from said mapping look-up unit and providing a corrected data stream in response to a sequence of three-bit symbol decodes” as disclosed in claim 20.

“a carrier generation circuit for providing a reference signal for demodulating a received sequence of symbol frames decoded as quadrature demodulated signals, said circuit comprising: an oscillator having an output for providing said reference signal and an control input for receiving a phase error signal; a switching circuit having an output coupled to said control input of said oscillator for selectively applying an input phase error signal in response to a switch control input signal; a phase error magnitude circuit having inputs coupled to said quadrature demodulated signals for generating said input phase error signal and an output coupled to said switching circuit; and an amplitude detector having inputs coupled to said quadrature demodulated signals and an output coupled to said switch control input signal, whereby a phase of said oscillator is controlled in conformity with a subset of said symbol signal frames in conformity with a detected amplitude of said quadrature demodulated signals” as disclosed in claim 22.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

CONCLUSION

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

Art Unit: 2611

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams



lbw

May 4, 2007



MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER